PROGRESS REPORTS

FROM

EXPERIMENT STATIONS

SEASON 1954-55

SURVEY OF REPORTS

PUBLISHED BY

THE EMPIRE COTTON GROWING CORPORATION

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PROGRESS REPORTS FROM EXPERIMENT STATIONS. SEASON 1954-55

A full list of the reports published for the season 1954-55 is given below; the price post free is 7/6d. for the set of 10, or 9d. each for individual reports.

1. Cotton Research Station, Namulonge, Uganda.
   This is the only station at which members of the Corporation's staff are working which can be described as a Corporation station. Elsewhere, members of the Corporation's staff work on Government Experiment Stations.

2. Sudan.

3. Kenya—Nyanza Province.

4. Tanganyika—Lake Province.

5. „ —Eastern Province.

6. Nyasaland.

7. Northern Nigeria.

8. Aden.

9. West Indies.

10. Survey of Reports for 1954-55.

SURVEY OF PROGRESS REPORTS FOR THE SEASON 1954-55

BY

SIR JOSEPH HUTCHINSON.

General.

Nigeria and Tanganyika again produced record crops. In both territories the records reflect a real increase in crop size, and not merely a series of favourable climatic circumstances. Uganda, on the other hand, reaped a very disappointing crop. Full details of production in the Empire territories are given in the table on page 6.

Crop Husbandry.

The importance of timely planting is universally recognised. It is interesting to note changes in ideas as to what constitutes timeliness. In Nyanza (Kenya), "early" planting now means March, whereas a few years ago June was regarded as early. Similarly, in the Eastern Province of Tanganyika early planting now means February and early March. In Montserrat and St. Kitts, B.W.I., on the other hand, starting with the 1956-57 crop, the planting season is to be changed from February-May to October.

Comparisons of flat versus ridged and tie ridged systems of cultivation were widely studied. Large yield advantages from tied ridges were virtually confined to the Lake Province of Tanganyika. Elsewhere differences were usually insignificant, and sometimes in favour of flat and sometimes of ridge. The value of such cultivation practices is difficult to assess in short term experiments, however, as no weight is then given to considerations of soil and water conservation over the long term.

In the West Indies, out-of-season land use and "weedicide" trials gave complementary results. It was evident that the main effect of land treatments before the planting of the cotton crop was on weed competition. Precropping or "weedicide" treatments that gave the young cotton an advantage in competition with weeds resulted in bigger cotton crops.

Entomology.

Entomological studies yielded further evidence on the extent to which pest damage may be compensated by further growth. At Namulonge (Uganda), with early sown cotton, the total number of shed fruiting points was fairly constant, but the proportion between insect attacked and undamaged sheds varied according to the insecticide treatment given. Similar evidence of recovery was obtained

in Nigeria. Real losses followed insect damage at stages where recovery was not possible. The most important of such losses were late season boll losses from bollworms, partial damage to bolls that persisted to maturity, and pest damage in excess of the capacity of the plant to compensate. This last class of loss occurs either in crops where the level of growth is so low that recovery is poor, or in potentially very productive crops, where the proportion of fruiting points produced that can be carried to maturity is very high. Thus certain general principles in assessing real losses from pests are emerging. It is obviously not profitable to prevent pest damage for which the plant can compensate, nor to save even a very considerable proportion of a crop that is ill grown and would be poor anyway. Insecticide control of pests becomes worth considering in well grown crops with a high yield potential—such as may be grown in the Eastern Province of Tanganyika—or where considerable boll losses occur at a late stage in the life of the crop, as with red bollworm in Nigeria and Nyasaland, and with stainers and the like in Tanganyika and Nyasaland.

So far, little success has been achieved in controlling partial loss of bolls, and where invasions by such insects as stainers take place, it is difficult to kill the invaders fast enough to avoid damage, at least to the margins of fields.

Changes in crop timing may have considerable effects on pest status. Early cropping to avoid red bollworm in Nyasaland, and to increase crop potential in Eastern Tanganyika, have both resulted in more serious infestations with jassid.

Plant Pathology.

Seed dressing with copper compounds to control seed borne infection by bacterial blight is now commercial practice in Uganda, Tanganyika, Kenya, Nyasaland and Aden. This is generally recognised to be important chiefly as an insurance against epidemic spread of the disease. In general, it is difficult to demonstrate losses from bacterial blight in formal trials, partly because of the difficulty of avoiding spread from infected controls, but mainly because in many seasons the disease does not inflict damage beyond the power of the plant to compensate. In the Lake Province of Tanganyika, however, convincing demonstrations of crop loss from blight were achieved.

Wilt is causing some anxiety in Aden and in lake shore areas in Tanganyika. *Fusarium* pathogenic to cotton has been isolated in Tanganyika. The causative organism in Aden has not yet been cultured for identification. Work on *Verticillium* continues at Namulonge. *Verticillium* is evidently of long term importance, but is not immediately serious in Uganda.

Plant Breeding.

In plant breeding steady progress is recorded. NC54 from Namulonge went into multiplication in Uganda. Uk55 was issued from Ukiriguru for the Lake Province of Tanganyika. In Northern Nigeria enough Samaru 26J was produced to plant 300 acres (Stage C), and thereby to bypass Stage B of the Daudawa seed multiplication scheme.

Most breeding stations now have two or even three breeding projects in hand. In general, the immediate project is the improvement of the local stock by selection. The second project usually involves hybridisation, very often primarily for the introduction of bacterial blight resistance, and sometimes to bring in jassid resistance. Several stations also run a panmixis bulk as a third project, either merely allowing gene exchange among a wide range of possibly useful material, or exercising a gentle selection pressure on such an interbreeding population, with a view to building up a new basic stock for use when current material is exhausted.

The development of quality testing at the plant breeding level continues. Evenson's test for seed coat nep is now standard practice at most stations, and air-flow tests and sorter tests are carried out at Namulonge for plant breeders in the East and Central African territories.

Received July 1956.

STATISTICAL SECTION.

COTTON PLANTING AND PICKING DATES

	Planting.	*Picking.*
Sudan:		
Irrigated	August-September	January-May
Raingrown	June-August	October-February
Uganda	June-August	December-March
Kenya	May-August	December-February
Tanganyika:		
Lake Province	November-January	April-August
Eastern Province	February-April	July-October
Nyasaland:		
Southern and Central Provinces	December-January	June-July
Northern Province	May-June	November-December
Southern Rhodesia	October-December	April-June
South Africa	November-December	May-July
Northern Nigeria	June-August	November-February
Aden	August-October	February-May
West Indies	August-October	January-April
Australia, Queensland	October-December	April-July

YIELDS OF LINT PER ACRE

The figures shown below have been included to give some idea of the yields obtained from cotton grown in different territories and under different conditions.

When looking at the figures it should be borne in mind that in most territories in Africa cotton is grown by peasant cultivators on small and scattered holdings, and is sometimes interplanted with other crops. In these circumstances accurate estimates of the area planted to cotton are difficult to obtain, and this naturally makes it difficult to arrive at the true yield per acre.

YIELDS OF LINT IN POUNDS PER ACRE.

	1951-52	1952-53	1953-54	1954-55
Sudan:				
Gezira.—Irrigated	313	474	536	440
Gash & Tokar.—Flood	122	144	125	125
American.—Raingrown	127	111	118	112
Aden.—Flood	293	461	434	286
W. Indies.—Raingrown	147	152	127	176
Uganda.—Raingrown	100	86	98	69
Kenya.—Nyanza Province.—Raingrown	93	53	56	60
Tanganyika.—Lake Prov.—Raingrown	169	168	167	142
Nyasaland.—Raingrown	111	103	97	110
Cyprus.—Raingrown	81	102	135	134
Queensland.—Mixed	132	205	165	141
U.S.A.:				
Oklahoma.—Mainly raingrown	105	205	151	275
Texas.—Mixed	171	233	245	282
California.—Irrigated	622	632	806	803

EMPIRE COTTON GROWING CORPORATION

COTTON CROPS FOR 30 SEASONS, 1924-25 TO 1953-54

(in bales of 400 lb.)

Season	Sudan	Uganda	Kenya	Tanganyika	Nyasaland	S. Rhodesia	S. Africa and Swaziland	Nigeria	West Indies	Others	Total
1924-25	44,912	196,038	2,250	21,724	7,718	4,907	16,936	39,137	4,186	22,715	360,523
1925-26	121,131	180,859	2,046	24,280	4,976	6,803	20,381	47,909	5,941	18,609	432,935
1926-27	148,118	131,728	1,232	15,966	2,792	639	10,242	27,464	6,076	10,991	355,248
1927-28	126,115	138,486	1,241	32,954	4,470	90	11,013	20,930	4,088	18,750	358,137
1928-29	161,536	204,057	1,984	27,785	6,095	280	9,774	32,126	5,377	15,842	464,856
1929-30	157,769	129,969	1,518	23,135	9,331	1,481	16,213	43,925	5,672	23,156	412,169
1930-31	120,310	191,305	783	11,351	4,205	1,974	8,123	18,850	5,106	16,912	378,919
1931-32	234,964	203,265	1,744	18,039	5,067	579	2,801	6,350	2,524	6,944	482,277
1932-33	137,384	294,828	4,276	30,834	5,942	355	1,860	24,366	2,614	14,960	517,419
1933-34	157,625	285,986	6,749	39,009	10,713	689	2,440	28,247	3,618	24,096	559,172
1934-35	296,131	253,242	8,773	58,540	21,006	566	2,966	58,851	4,720	23,186	727,981
1935-36	248,285	321,348	15,783	67,369	13,730	329	1,983	60,076	4,565	20,141	753,609
1936-37	332,687	338,391	22,166	61,783	13,908	530	3,397	47,554	4,676	15,930	841,022
1937-38	331,639	417,179	19,610	44,636	17,358	338	1,132	31,636	6,196	14,574	884,298
1938-39	331,104	303,893	9,976	64,106	5,276	82	747	24,057	5,636	17,475	762,352
1939-40	292,706	296,672	11,622	65,314	6,526	408	2,061	50,632	8,492	12,389	746,822
1940-41	319,682	368,898	15,094	72,766	5,376	433	1,857	73,295	9,312	15,565	882,278
1941-42	295,107	236,370	12,269	51,017	14,392	1,938	854	36,119	7,450	14,426	669,942
1942-43	354,109	112,849	5,453	38,309	5,552	1,464	584	32,494	4,555	10,140	565,509
1943-44	222,877	191,870	6,330	24,797	8,450	1,657	664	24,618	4,099	8,971	494,333
1944-45	374,296	272,064	5,384	40,421	8,302	1,227	338	15,803	4,525	4,040	726,400
1945-46	242,343	228,709	5,015	41,028	9,050	870	340	36,602	3,762	4,982	572,701
1946-47	282,387	231,745	5,148	39,963	11,166	434	1,113	34,175	2,573	4,118	612,822
1947-48	276,925	170,066	4,860	53,764	12,852	701	2,709	21,735	3,963	3,350	550,925
1948-49	340,305	391,240	9,714	51,308	2,392	2,093	5,176	50,737	6,723	3,642	863,330
1949-50	359,968	339,788	7,973	49,715	10,408	5,045	7,016	62,348	5,635	6,830	854,726
1950-51	526,592	346,465	13,824	47,464	3,884	4,143	14,946	76,652	6,099	14,709	1,054,778
1951-52	312,886	380,304	16,493	77,763	12,675	9,563	34,568	113,510	5,810	13,050	976,622
1952-53	476,285	320,147	9,411	50,638	15,854	3,111	23,133	95,758	4,221	18,559	1,017,117
1953-54	498,482	397,631	17,027	102,638	11,308	1,960	23,750	143,169	3,766	28,354	1,228,085

CURRENT COTTON CROPS.

(in bales of 400 lb.)

	Record Crops		*Production*		
	Season	*Amount*	1921-22 (*when the Corporation was established*)	*Average 3 years* 1951-52 to 1953-54	1954-55
Sudan	1950-51	526,592	24,074	429,217	486,063
Uganda	1937-38	417,179	48,290	366,027	299,935
Kenya	1936-37	22,166	417	14,310	12,963
Tanganyika	1954-55	*120,588*	7,175	77,013	*120,588*
Nyasaland	1934-35	21,006	5,422	13,279	15,407
Northern Rhodesia	1925-26	506	80	176	82
Southern Rhodesia	1951-52	9,563	nil	4,878	402
South Africa and Swaziland ...	1954-55	41,000	2,740	27,150	41,000
Nigeria*	1954-55	187,741	15,096	117,479	187,741
West Indies	1940-41	9,312	4,314	4,599	6,377
Australia	1933-34	21,924	3,140	3,506	5,410
Aden	1954-55	23,316	nil	13,112	23,316
Cyprus	1934-35	5,214	1,505	2,677	4,108
Ceylon	1948-49	840	nil	500	*500*
Total	1953-54	1,228,085	112,253	1,073,923	*1,203,892*

*Exports only. Figures in italics are estimates.

Note.—Cotton growing in Aden started only in 1948, and the rapid progress made since can be seen from the following production figures.

1948-49	120	bales
1949-50	1,587	,,
1950-51	9,954	,,
1951-52	7,206	,,
1952-53	10,396	,,
1953-54	21,736	,,
1954-55	23,316	,,

EMPIRE COTTON GROWING CORPORATION

12 CHANTREY HOUSE, ECCLESTON STREET, S.W.1.

List of Publications issued to date. Those still in print can be obtained direct from the Corporation at the above address. Those out of print are marked with an asterisk. The prices include postage.

GENERAL AND TERRITORIAL.

"Cotton Growing within the British Empire and the World's Capacity for Consuming Cotton Goods." J. W. McConnel. 1921. Price **2s.**

* "Cotton Growing in Nigeria." Sir Hector Duff. 1921.

"The Extension of Cotton Cultivation in Tanganyika Territory." Major Hastings Horne. 1922. Price **2s.**

* "Cotton Cultivation in Nyasaland." H. C. Sampson. 1922.

* "Cotton Growing within the British Empire." L. G. Killby. 1924.

"Cotton Growing in South Africa." G. F. Keatinge. 1925. Price **2s.**

"A Cotton Research Station for the British Empire." Professor J. B. Farmer and Mr. L. G. Killby. 1925. Price **2s.**

"Report on the Cotton-Growing Industry in Uganda, Kenya, and the Mwanza District of Tanganyika." Col. C. N. French. 1925. Price **1s. 3d.**

"Memorandum by the Mechanical Transport Sub-Committee." Mr. G. H. Baillie, Mr. R. H. Brackenbury, Col. C. N. French. 1925. Price **2s.**

"Report on the Cotton-Growing Industry of Nigeria, 1926." Col. C. N. French. 1926. Price **2s.**

* "The Principles and Practice of Yield Trials." F. L. Engledow and G. Udny Yule. 1926.

"Report on Suitable Rotation Crops for Cotton." H. C. Sampson. 1927. Price **1s.**

"Cotton Growing in Southern Africa and the Rhodesias." Report on a Tour undertaken by Sir James Currie, Mr. J. S. Addison, and Mr. H. C. Jefferys. 1927. Price **2s.**

* "Reports from Turkestan Plant Breeding Station, Tashkent." 1928.

"Review of the Situation in the Principal Cotton-Growing Territories of the Empire, and a Summary of the Main Activities of the Corporation since their Formation." 1928. Price **9d.**

"Report on Cotton Breeding and Seed Supply in Nigeria, 1928." F. L. Engledow and C. N. French. Price **2s.**

* "Conference of Workers on Cotton-Growing Problems, held August, 1930." Papers and Discussions.

"Conference of Workers on Cotton-Growing Problems, held July, 1934." Papers and Discussions. Price **2s 6d.**

* "The Principles and Practice of Field Experimentation." J. Wishart and H. G. Sanders. 1935.

"Cotton Pest Control Work in Southern and Central Africa and the Rhodesias." J. W. Munro. 1937. Price **2s. 6d.**

"Conference of Workers on Cotton Growing Problems, held September, 1938." Report of Proceedings and Papers submitted. Price **2s. 6d.**

"Spinning Test Methods—Shirley Institute, 1948." C. Underwood. 1949. Price **1s.**

* Out of print.

"Field Key to the Principal Disorders of Cotton in Africa." E. O. Pearson. 1950. Price **6d.**

"Short History of the Empire Cotton Growing Corporation, 1921 to 1950." 1951. Free.

"Empire Cotton Growing Corporation." An illustrated booklet describing the functions and achievements of the Corporation. 1952. Free.

PROGRESS REPORTS FROM EXPERIMENT STATIONS.

In print (in seasonal volumes only): 1923-25 (one volume price **2s.**); 1926-27, 1931-32, 1934-35, 1935-36 (price **2s. 6d.** each); 1942-43, and 1945-46 to 1950-51 (price **3s.** each).

From 1951-52 published in 10-12 sections each season, price **9d.** each or **7s. 6d.** the set.

REVIEW OF THE WORK OF THE EXPERIMENT STATIONS.

Seasons 1933-34, 1934-35, J. C. Willis; 1935-36, 1936-37, W. Nowell; 1937-38, 1938-39, W. Nowell and J. W. Munro. Price **1s 6d.** each. From 1939 published triennially in one volume:—1939-40 to 1941-42, 1942-43 to 1944-45, W. Nowell. Price **2s.** each.

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* **No. 19.** Colchicine-Produced Polyploids in *Gossypium*. (i) An Autotetraploid Asiatic Cotton and certain of its Hybrids with Wild Diploid Species. S. G. Stephens. 1943.

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* **No. 22.** The Genetic Organization of Leaf-Shape Development in the genus *Gossypium*. S. G. Stephens. 1944.

* **No. 23.** The Genetics of Species Development in the Old World Cottons. R. A. Silow. 1944.

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* Out of print.

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